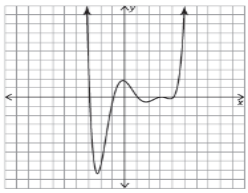
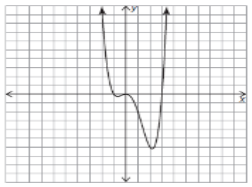
Secondary Math III Name_____
Unit 3 Review Period____
Assignment #3.5

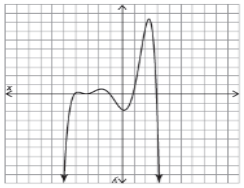
Show work for credit.

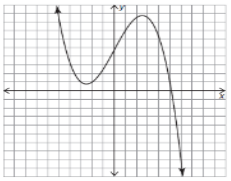
Multiple Choice:

1. Which of the following could be the graph of a fourth-degree polynomial with three real zeros and a positive leading coefficient?

a. 

b. 

c. 

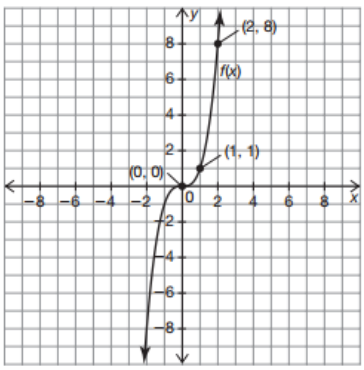
d. 

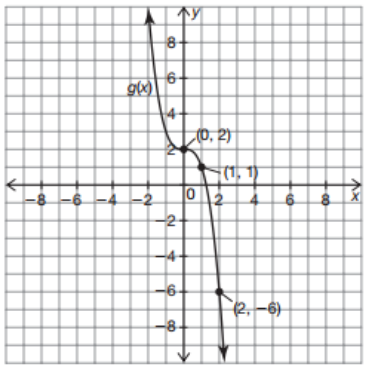
2. Which of the following is a polynomial function with zeros of −1 (multiplicity 2) and 3?
   a. $f(x)=(x-1)^2(x-3)$
   b. $f(x)=(x-1)^2(x+3)$
   c. $f(x)=(x+1)^2(x-3)$
   d. $f(x)=(x+1)^2(x+3)$

3. Determine the product of the three linear factors $(2x-4)^3$
   a. $8x^3+64$
   b. $8x^3-48x^2+96x-64$
   c. $6x^3-12$
   d. $8x^3+16x^2+32x-64$

4. Analyze the graphs of $f(x)$ and $g(x)$. Pick the equation that correctly states $g(x)$ written in terms of $f(x)$.

   a. $g(x)=-f(x)+2$
   b. $g(x)=f(x)-2$
   c. $g(x)=-f(x)-2$
   d. $g(x)=f(x)+2$



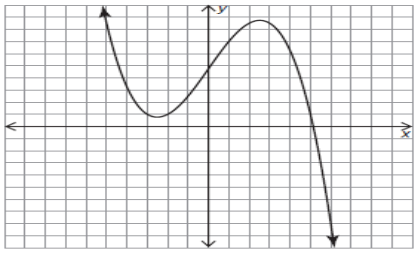


Free response.

5. The equation of a transformed function $m(x)$ is given. State the transformation(s).

$$m(x) = -x^5 + 5$$

6. Use the graph to determine whether the function has even, odd, or neither symmetry.



7. Find the volume of a square pyramid which has a base that is 9 inches on each side and a height of 14 inches? The volume of a pyramid is given as follows: $V = \frac{1}{3}(area\ of\ base)(height)$

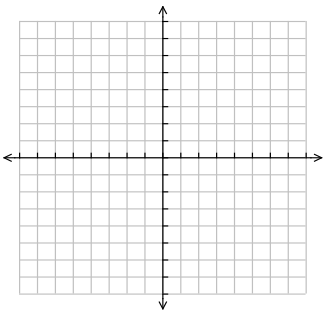
8. Determine algebraically whether the function is even, odd, or has neither symmetry.

a. $f(x) = -x^4 + x^2 - 5$

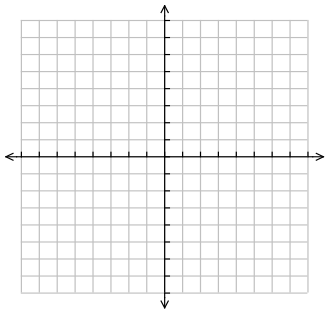
b. $g(x) = 5x^3 - 6x + 1$

9. Use the given coordinate planes to sketch a graph with the graph with the given characteristics.

a. As $x \to \infty, f(x) \to -\infty$
Even degree
Three extrema
y-intercept at (0, -3)



b. As $x \to -\infty, f(x) \to -\infty$
Odd degree
5 zeros
y-intercept at (0, 2)



10. Use the degree and the leading coefficient to describe the left and right end behaviors of the graph of the following polynomials:

a. $h(x) = x^2(3x + 3)^3(-x + 3)$

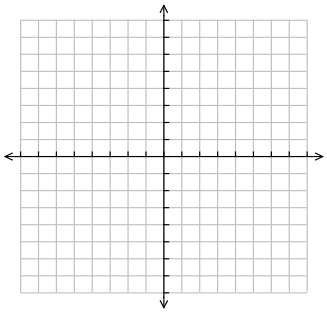
Left_____ Right _____

b. $g(x) = 5x^7 + 7x - 3$

Left_____ Right _____

11. FACTOR to determine the zeros (*x*-intercepts) and multiplicities. Then determine the end behaviors and *y*-intercept. Finally, sketch the graph of the function.

a. $f(x) = x^3 + 8x^2 - 20x$



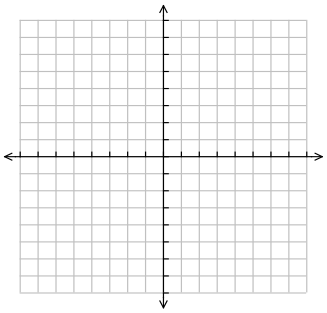
Zeros:_____

Multiplicities:_____

End behaviors: _____

y-intercept: _____

b. $f(x) = x^2 - 2x - 8$



Zeros:_____

Multiplicities:_____

End behaviors:_____

y-intercept:_____

12. Analyze the following two functions: $m(x) = x^4$ $p(x) = -m(x - 3) + 4$

$m(x)$ is graphed on the coordinate plane at the right.

a. Describe the transformations that produce $p(x)$.

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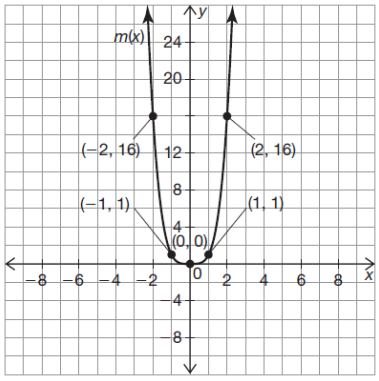
b. Complete the table of values.

Reference Points on $m(x)$	→	Corresponding Points on $p(x)$
(0, 0)	→	
(1, 1)	→	
(2, 16)	→	



c. Graph $p(x)$ on the same coordinate plane and state whether $p(x)$ has even, odd or neither symmetry.

13. Find the zeros of the quadratic functions.

a. $x^2 - 2x + 2$

b. $x^2 - 6x + 2$

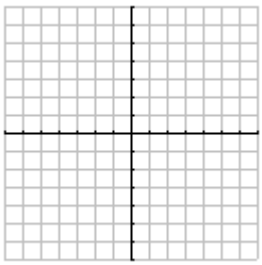
14. Graph. Label the vertex and two other points. SHOW WORK.

a. $f(x) = -(x + 4)^2 + 5$

Vertex: _____

Point 1:_____

Point 2:_____



b. $f(x) = -(x + 1)^2 + 2$

Vertex: _____

Point 1:_____

Point 2:_____